STRUCTURE OF THE HORSE'S FOOT

AND THE

PRINCIPLES OF SHOEING.

BY

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WITH TWELVE ILLUSTRATIONS.

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THE

STRUCTURE OF THE HORSE'S FOOT

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ORIGINALLY the art of shoeing must have been based on observation of the effects of wear on the natural protective covering of the foot, the hoof-horn. Even in the wild state it is more than probable that the hoofs suffered injury from attrition and concussion, but in such cases the horse would instinctively avoid using the damaged foot unnecessarily until the damage had been repaired by fresh growth of horn. In domestication some plan of avoiding the loss of the animal's services while a new horny covering was developed would soon become a necessity, and it is easy to understand that the device of attaching a ring or plate of some wear-resisting material to the bottom of the horse's foot would be resorted to. After many experiments it would have been discovered that less than iron-resistant materials were not well adapted for the purpose of protecting the hoof from undue wear.

Whatever might have been the nature of the substance first employed, it may be assumed that it was attached to the hoof by means of thongs of hide or some flexible substance.

Driving nails into the foot could only have been suggested as a desperate alternative when other means had failed; and it is not improbable that the ingenious person who first attempted to secure a shoe to the hoof by the aid of hammer and nails fortified himself by making a section through the foot as a preparatory measure.

Even the elementary knowledge of anatomy thus gained would be of incalculable value to the primeval shoer of horses, and would suggest further investigation.

Anatomy of the Foot.

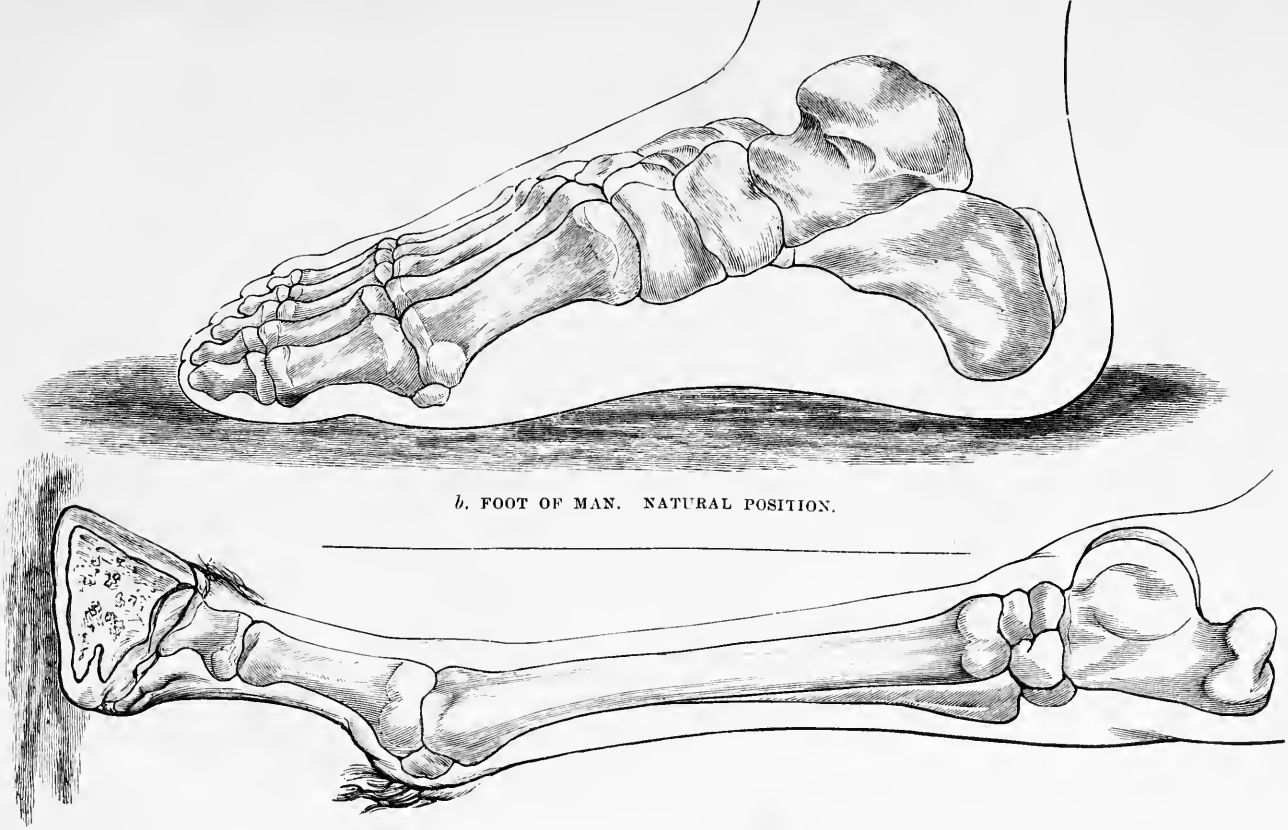
The term anatomy implies the act of cutting an organ in such a manner as to expose to view portions which cannot be seen on the surface, and the workman will understand that such a view of the interior is of great advantage when it becomes necessary to interfere in any manner with the structures of which the organ is composed. A concise account of the structures of the foot of the horse will form, therefore, a fitting introduction to the subject of the principles and practice of shoeing.

Most persons, when thinking or speaking of the foot of the horse, have in their minds the idea of their own foot as an organ by the aid of which they stand, or walk, or run. But the first step in the inquiry must be to show that the horse does not, as the man does, put all the parts forming the foot on the ground at all, but only a small portion of it; and that the organ which is always called the foot of the horse is really, when compared with the human foot, the point of the toe. A few drawings will make this clear.

In Fig. 1, on page 3, *a* is the hind foot of the horse, complete with the full set of bones; *b* is the foot of the man, with the like set of bones. A glance at the illustrations is enough to prove that the bones of the human foot lie along the ground from heel—*i.e.* the point of the hock in the horse—to toe; while the horse's heel, being in fact the point of the hock, is some two feet or more off the ground.

In Fig. 2, on page 4, there are two drawings which show what would happen if the horse could or did put the whole of the bones which form the foot of man on the ground as the man does, and if the man were to support himself with his toes only on the ground. It is true that in order to assume the position the man must be more or less an athlete; the man and the horse would be as nearly as possible in the same position. There would still be the difference in the ground surfaces of the extremities, as the horse has a single foot and the man has five digits and the same number of toes—exactly, by-the-by, as the horse's ancestors had in their early stage of development. Indeed, a visitor to the South Kensington Museum can trace the five terminal digits through successive changes to the four, three, and finally a single line of shank bone, pasterns and pedal-bones, the rudimentary digits remaining as splint bones in the horse of the present day.

After grasping the idea which the woodcuts are meant to convey, it will be easy to go on a little further, and find out how the toe of the horse is made to serve the purpose of a foot

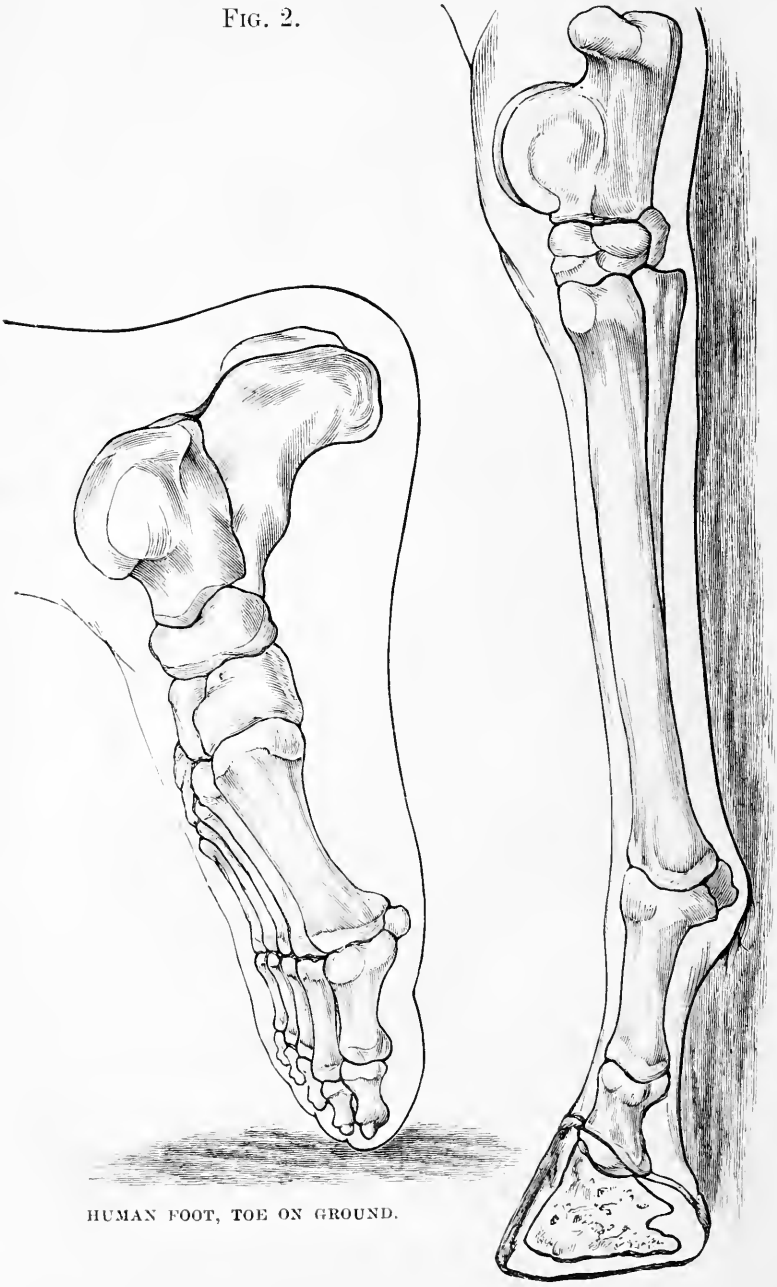


b. FOOT OF MAN. NATURAL POSITION.

a. FOOT OF HORSE, TOE ON GROUND.

FIG. 1.

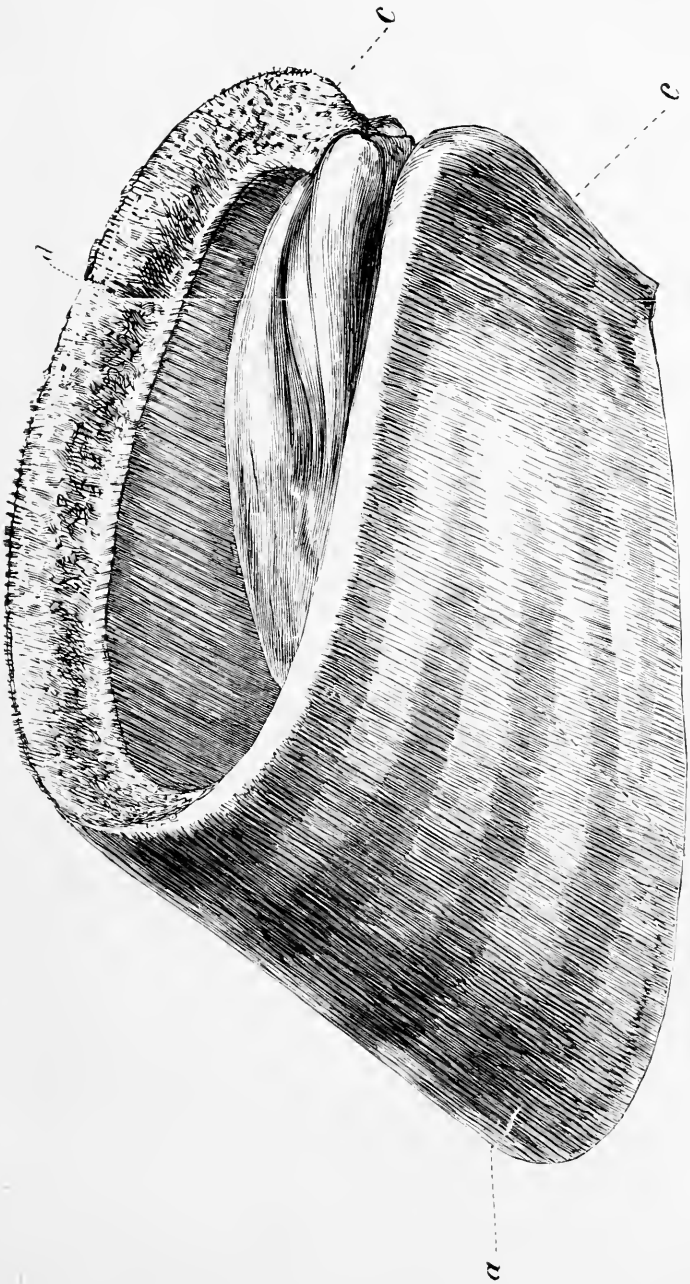
FIG. 2.



HUMAN FOOT, TOE ON GROUND.

WHOLE OF HORSE'S FOOT ON THE GROUND.

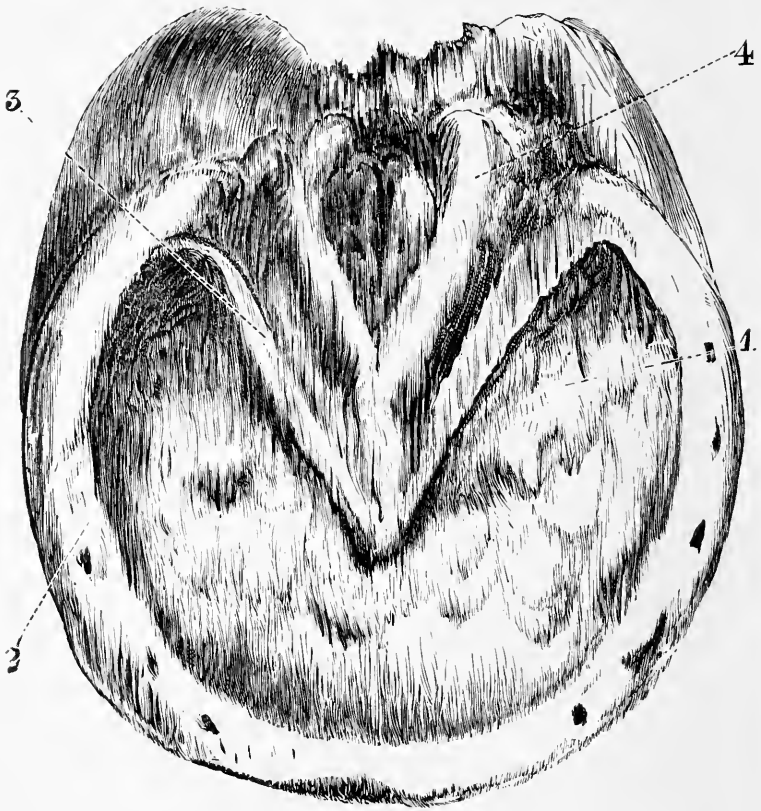
FIG. 3.



HOOF OF HORSE.

chiefly by the extra growth of the nail, which, instead of being a mere horny scale on the top of the toe, covers the part all over like a case or box of horn. The bones of the fore foot may, in like manner, be compared with those of the hand and wrist of man. But as the human hand is not used to support the weight

FIG. 1.



GROUND SURFACE OF HORSE'S FOOT, SOME WEEKS AFTER SHOEING.

of the body nor to assist in moving it, the human foot furnishes the best type of the foot of the horse.

To represent the position of the limbs of the horse the man must put himself in a horizontal position, supporting his body on the tips of his fingers and points of his toes; his wrists will then correctly represent the horse's knees and his ankles the horse's hocks; while his toe and finger-nails, if they could be

joined into a single mass on each foot and hand, would correspond to the hoof.

In beginning the inquiry about the structure and uses of the foot of the horse, it is most natural and easy to take the outside part of the organ, and in so doing it will be best to compare the foot of the horse with that of the foal at birth, before it has been used to bear the animal's weight. Figs. 3 and 4, on pages 5 and 6, show the external form of the foot of an adult horse, and Fig. 5, on page 8, that of a foal. It will be noted at once that there is a great difference in the state of the horn, especially at the bottom of the foot, in the two specimens.

In the adult hoof (Fig. 3), as it is seen resting on the ground, the wall of horn *a*, from the hair at the coronet down to the ground, is first noticed, and for the purpose of description it is divided into several parts. Exactly where the skin joins the hoof is the coronary ring *d*. The outside of the hoof is the wall or crust. At the back of the hoof are the heels, *c c*. A portion in the front *a*, is called the toe, and the sides of the wall are the inside and outside quarters. Only imaginary lines mark the points of separation of these different parts from each other.

In thickness, the wall of the foot varies according to the size of the animal and the treatment it has met with from the rasp of the shoeing-smith. An average of half an inch may be taken as near enough for practical purposes.

Having made out the general characters of the outer surface of the hoof as it rests on the ground, the next thing to be done is to lift it off the ground and look at the bottom of it, which can be seen in Fig. 4, on page 6. The parts exposed to view are the crust (2), bars (3), sole (1), and frog (4). The crust is turned in at each heel to form the two bars which meet nearly in the centre of the circle, leaving a triangular space behind which is filled up by the mass of soft horn called the frog, and a half-circular space in front, in which is lodged the sole. In form the sole is concave at the bottom and convex above, as may be proved by dissection. But in the foot which has been left for some weeks untouched, the ground surface will be nearly flat—crust, bars, frog, and sole forming one rough level, covered with loose pieces of horn breaking away from the sole and frog.

Between the fully-formed foot of the horse and the half-grown foot of the newly-born foal there are important differences, which may easily be seen, as specimens of both organs are common enough. The first thing which strikes the observer is the great difference in the arrangement of the base of the foot in the two animals. In the hoof of the foal (Fig. 5, page 8)

the fibres of horn at the bottom of the foot are continued to a point, the fibres being joined together not unlike a half-cleaned paint-brush. No frog or crust or bars can be seen in the foot of the foal; but, after a few days' contact with the ground, the brush-like masses of horn fibre are broken off and the sole becomes

FIG. 5.

FOOT OF FOAL AT BIRTH.

flat or slightly hollow, but never presents the deeply concave form until it has been brought under the knife, an instrument which is now used with economy by the modern shoeing-smith.

Up to this point only the horny covering has been described as it is seen without dissection; and it is now time to indicate

what is to be seen by taking the foot to pieces. The workman who is fond of his work will look beyond the surface, if only for the sake of finding out the nature of the things he has to deal with. He may proceed in many ways, all leading to the same end, and it is not a matter of much moment whether he begins by taking off the hoof and then working inwards to the bone which is the foundation of the foot, or makes a cut which will enable him to see at one view all the parts of which it is made up.

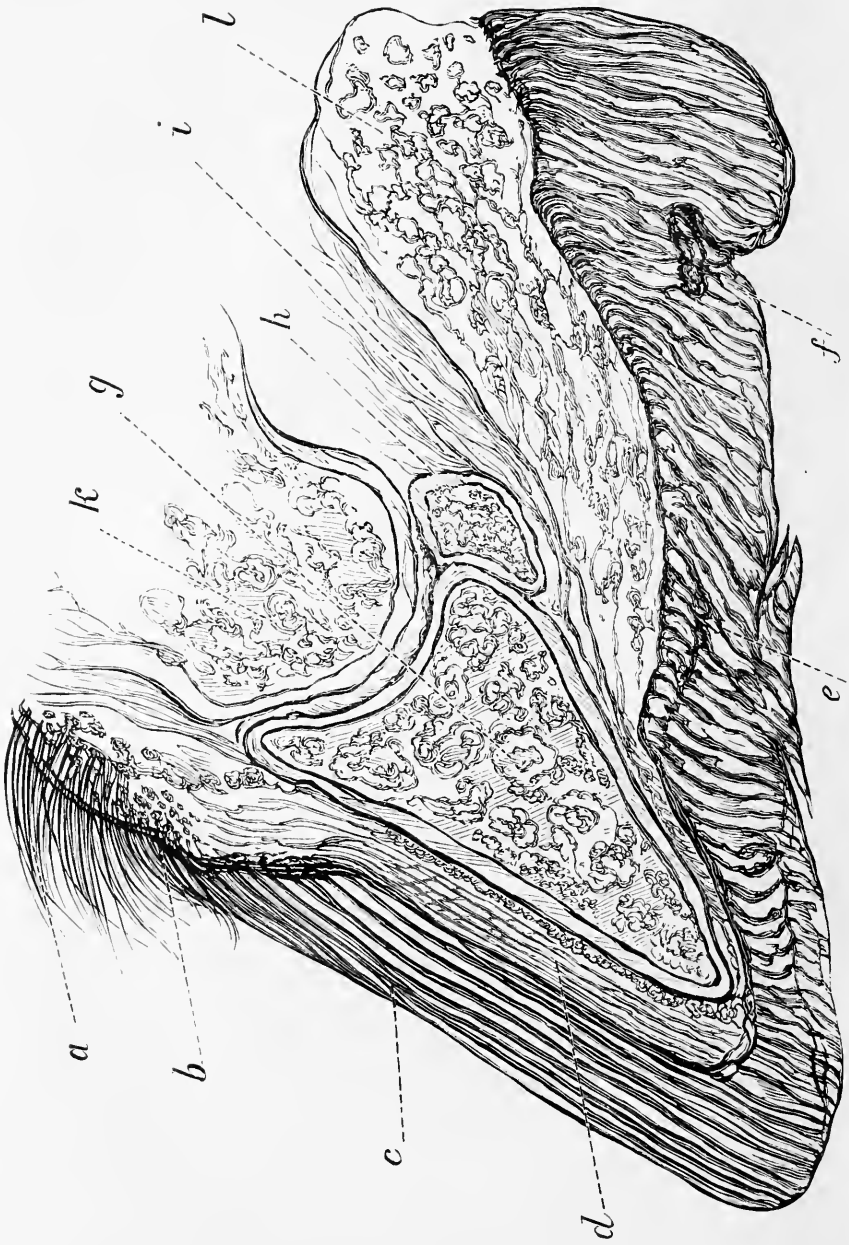
Perhaps it will be most interesting to begin by seeing the structures in their proper position. For this purpose a cut with a fine saw must be made quite through the centre of the organ. In Fig. 6, on page 10, a section of this kind is drawn from a specimen which was made so thin as to be transparent, and the various parts are represented as seen by the aid of a low magnifying power. The parts shown are *a*, skin of coronet; *b*, fibres of coronary frog band; *c*, fibres of wall; *d*, horny lamina; *e*, fibres of sole; *f*, fibres of frog; *g*, section of coffin bone; *h*, section of navicular bone; *i*, section of flexor tendon; *k*, section of coronet bone; *l*, section of fatty frog.

A careful inspection of the figure, and close reading of the description, will give the reader a fair idea of the arrangement of the parts which are included in the foot, and assist him in the next step in the inquiry, which will consist in taking the foot to pieces and looking at each part separately.

The first step will be the removal of the hoof, which can be done most easily and in the shortest time by thrusting the foot into the forge fire and keeping it there until the outer portion of the hoof is reduced to a cinder. Very little force will then disconnect the hoof from the structures to which it is attached.

When the hoof is taken off by the aid of heat, or by soaking for some time in water, the internal foot is displayed, and also the inside of the horny box; and the drawings in Figs. 3 and 7 (pages 5 and 11) show these parts after separation. The points for special notice are the very perfect fitting of the internal foot to the inside of the hoof. The coronary band (Fig. 7, 1 to 3) of the one rests in the hollow in the upper part of the hoof (Fig. 3, *d*); the folds of membrane (*laminæ*) of the internal foot (Fig. 7 (2)) are lodged between the horny folds (*laminæ*) of the inside of the hoof (Fig. 3, *a*); and the sole of the internal foot, with the frog and the bars, find their exact counterparts in the inside of the hoof which they form for their own covering and protection. Fig. 8 on page 12 shows the bottom of the foot: the coronary band (1) continuing to sensitive frog (4); the sensitive laminæ (2) continuing to bars (5); the sensitive sole (3).

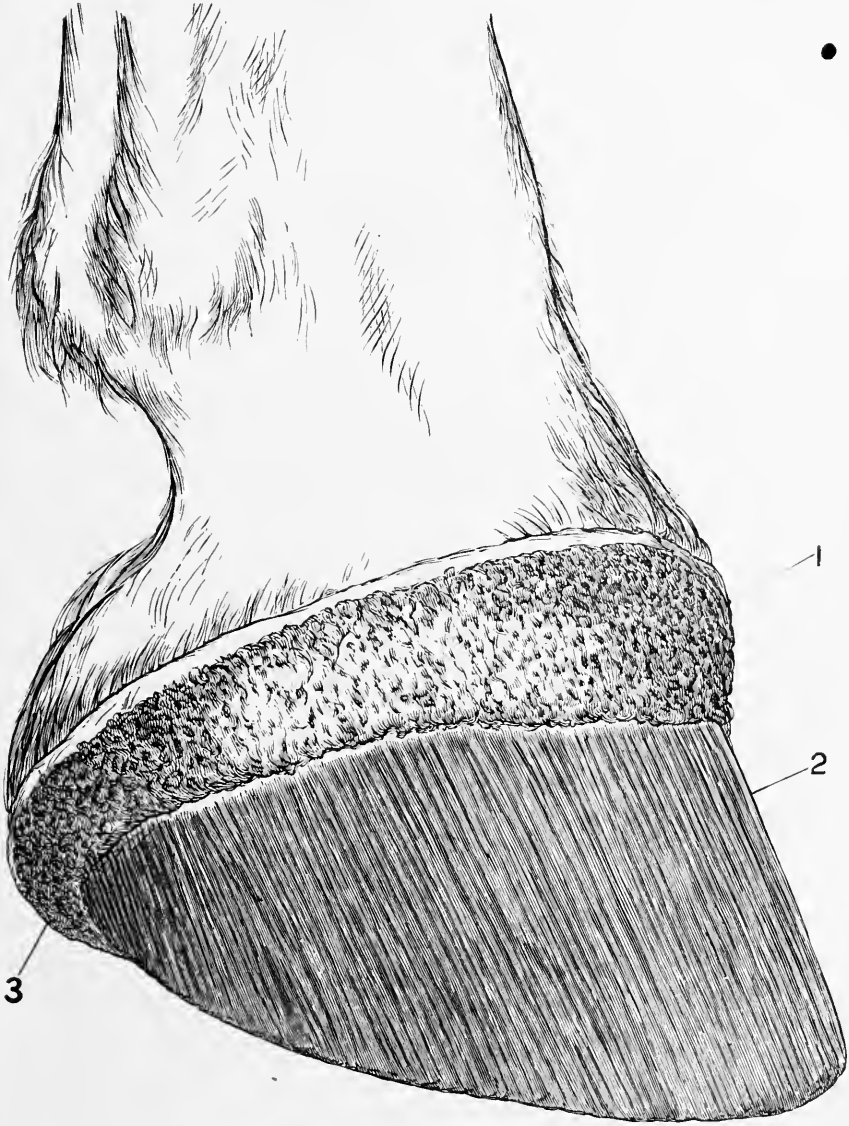
FIG. 6.



SECTION THROUGH CENTRE OF HORSE'S FOOT.

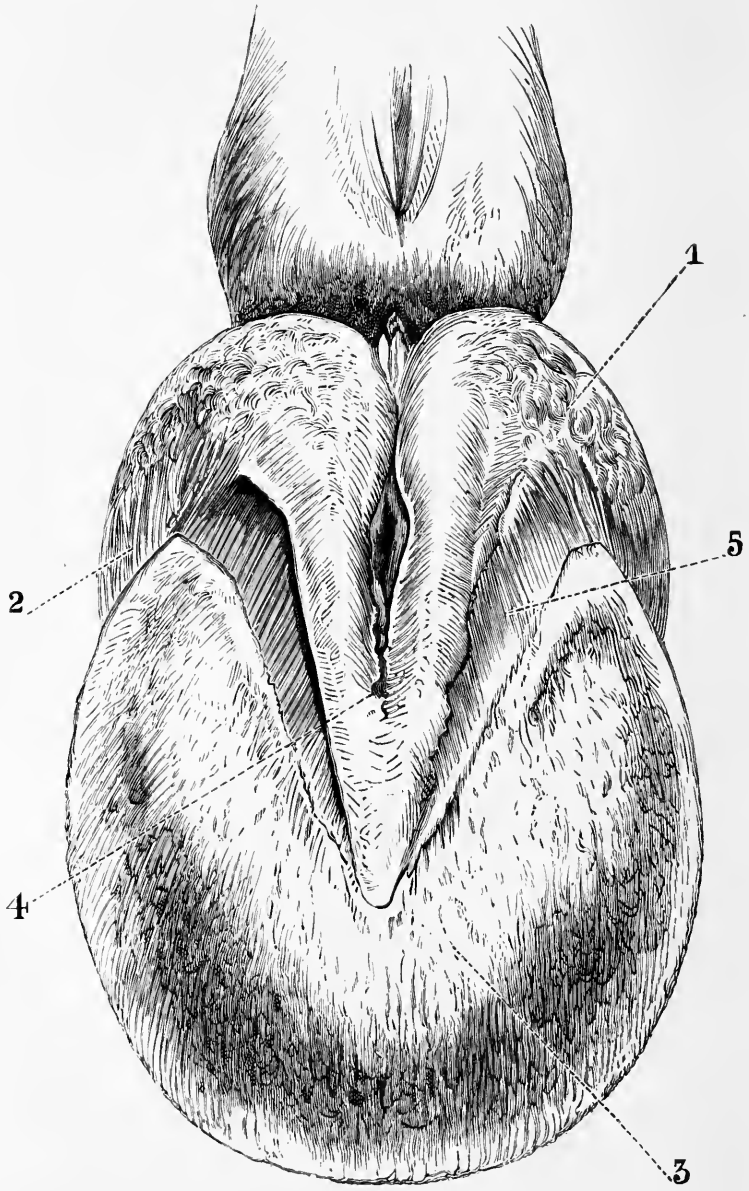
It will be seen at once that there is a marked difference in the arrangement of the structure of the portion of the membrane

FIG. 7.



MEMBRANE OF INTERNAL FOOT. HOOF REMOVED.

FIG. 8.



MEMBRANE OF INTERNAL SOLE AND FROG.

which covers the coronary band and that which covers the part below it. The former is covered with minute hair-like projections (villi), round which the horn cells or scales are secreted, gradually growing downwards as hollow horn fibres joined together to form the wall. The same villous membrane will be seen on the internal frog and internal soles, both of which become covered with horn, which, like the wall proceeding from the coronet, are formed by horn cell secreted from the villi of the membrane covering the internal frog and sole.

Below the coronet the sensitive membrane is arranged in minute folds or laminæ, which fit accurately into corresponding folds on the inside of that part of the hoof below the coronary band.

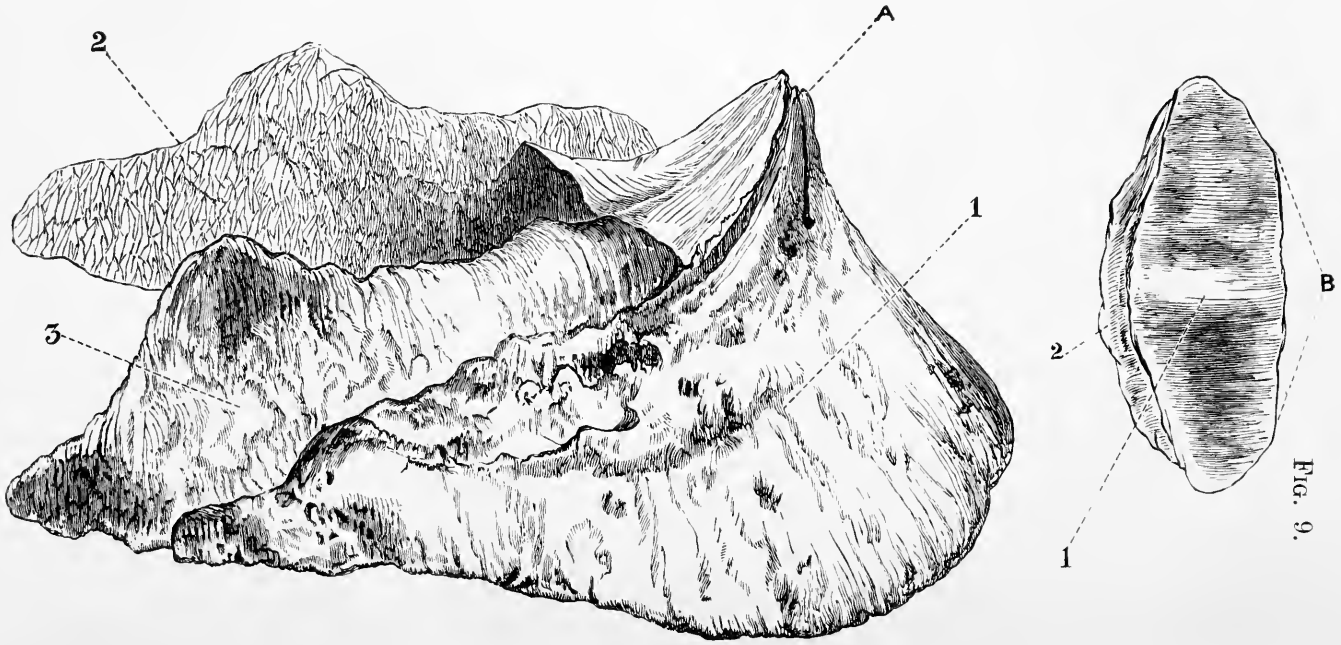
After the hoof is off there is nothing in the way of the knife, which may now be used to take off the membrane that secretes the horn. The observer will find that the tissues beneath are bone, fibrous structure, fat, and cartilage. The bones actually inside the hoof are the pedal bone and the navicular bone, both of which are shown in Fig. 9, A, B on page 14. To the pedal or coffin bone are fixed two wings of cartilage (2, 3), also seen in A, and in the space between the cartilages is a mass of fibre and fat, making together an elastic pad which Coleman called the "fatty frog."

It will be noticed that the pedal bone is a very dense structure, like ivory in hardness, and also that there are many canals passing through it in various directions for the passage of blood-vessels to supply the secreting membrane with blood. Branches of nerves are also very numerous, and the membrane of the internal foot is therefore correctly described as a highly vascular and sensitive structure.

The navicular bone (Fig. 9, B) is known as the seat of navicular disease, which is a common cause of serious and often incurable lameness in the forefeet. The bone is also remarkable for the extent of its joint surfaces compared with its size. Its upper surface forms part of the coffin joint with the short pastern. In front (2) it joins the pedal bone, and at the back (1) it forms a joint with the main flexor tendon, which passes over it to be fixed to the bottom of the pedal bone. This is the joint in which navicular disease occurs.

Functions of the Foot.

Much controversy has at various periods arisen in regard to the uses of the different structures which form the foot. Among the fancies of what now seems a long past age may be quoted the theory of ground surface expansion, which, plainly



PEDAL BONE WITH LATERAL CARTILAGES.

NAVICULAR BONE.

FIG. 9.

stated, was meant to convey the idea that the concave sole, under the pressure of the weight of the horse's body, became flattened into a plane, and consequently the base of the hoof was pressed outwards to an appreciable degree. In one set of experiments exact measure was taken of the bottom of the foot in various directions; the animal was made to stand in a bed of clay, while a heavy man mounted on its back; one foot was then lifted out of the clay bed, and the impression made by the foot was measured and found to be half an inch or more larger than the base of the foot. These results and similar useless records of experiments were gravely published and by many seriously accepted as proof of ground surface expansion, and shoes with hinges at the toes were suggested, and even manufactured, for the purpose of allowing the full expansion of the base of the hoof.

In the present day practical men are content to admit that the hoof yields slightly to the animal's weight, principally at the heels, and to meet this it is agreed that the heels should be left as far as possible unfettered by nails.

Taking the foot as a whole, it is evident that it is so formed as to be capable of supporting the animal's weight, at the same time that its various parts yield under pressure just enough to avoid the effects of concussion. The hoof is produced as fast as the wear and tear, under natural conditions, make new material necessary. So long as the horse is left to take care of himself and his feet, all goes well; but when man sets his needs in place of the animal's instincts, things commonly go wrong, and the hoof among other parts gives way.

The first and most important function of the foot, then, is to keep itself in repair, a work which it performs well within certain limits.

Next, the hoof horn is wanted to protect the internal sensitive structures by which it is formed, just as the outer or scarf skin covers and protects the true skin. The scales or cells of the hoof horn are identical with those of the cuticle; the hairs become crowded together to represent the fibres of the hoof, which is really a mass of hairs glued together, possessing toughness and density with a fair degree of elasticity. Perhaps if we had contrived to use our horses with such care that the natural density of the hoof might have been increased, shoes would not have been so essential, and we might by this time be in possession of a race of tough-hoofed horses, for which the services of the shoeing-smith would not be so constantly wanted.

Lastly, the function of the foot is to afford the horse a firm support and secure hold of the ground at all paces. That the hoof yields under pressure is admitted. That it spreads out, as

some people contend, when it is placed on the ground, is denied by all who have carefully looked at the arrangement of the parts of the organ in their relation to each other. The suggestion that the foot expands so much that the shoe ought to have a hinge at the toe to allow the movement to go on without hindrance is not worth discussion, nor, indeed, is any point connected with the theory of ground surface expansion and the tendency of the concave sole to assume the form of a plane under the pressure of the animal's weight.

The whole theory, in fact, may simply be left to the ingenious persons who are fond of splitting straws. The practical man need not be concerned about such matters. His own common-sense will teach him that the base of a horse's foot cannot expand in the way described, nor the sole descend to any extent without tearing the inside of the hoof from the internal membrane, to which it is everywhere closely and securely attached.

When the sole does descend it is the result of disease, and then it does not ascend again, but remains in a distorted condition.

Principles and Practice of Shoeing.

Principles, as the word is usually applied, mean rules or guides on which the workman bases his practice. Without some such basis it would not be possible to secure uniformity of action. Principles, in short, are the intelligent motives which direct mechanical work.

The shoeing-smith may be supposed to start with the idea that the hoof of the horse is to be protected, and he at once exercises his inventive faculties to devise a method or several methods of effecting this object. Shoes of various sorts and shapes have been tried, and the outcome of long experience is the adoption of the iron shoe as a means of protection against undue wear.

No one can say at what date the art of shoeing began; but it can hardly be doubted that as soon as horses were used by man for his pleasure or profit, it was found out that the hoofs which served the animal well so long as he was left in his natural condition were worn more quickly than they grew when his master fixed the amount of work which the horse was to perform. In such circumstances, some protection was required, and it may be supposed that the first idea of the owner, as already suggested, would be to adapt some sort of sole to the bottom of the foot, much as he did for his own feet; and it is not unlikely that his first attempt at fastening would be by means of strips of hide or thongs which he used for his own feet as fastenings

for his sandals. These failing, as they always do, iron spikes or nails would offer themselves as a means of fixing iron shoes to the horn. The late Dr. George Fleming, in his article on the Principles of Shoeing, in Vol. 42 of the Journal of the Royal Agricultural Society for 1881, remarked that the art of shoeing was probably known as early as B.C. 300, as a coin of that date has on it a figure of a horse being shod. The same author also observed that in a climate like ours some substantial hoof armature must have been employed by a horse-and-chariot-driving people like the ancient Britons, and, he suggested further, that the superstitions which still cling to horse-shoes as charms appear to be derived from the Druids, who were not only priests but skilled workers in metals.

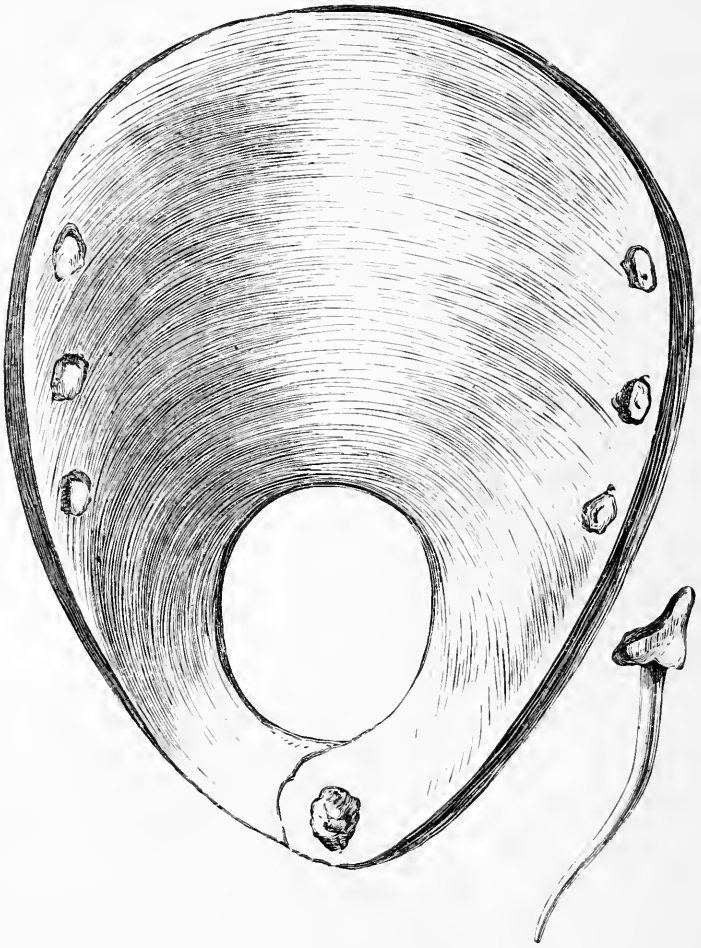
Having regard to the time that has passed since shoeing was first practised, and the amount of care and thought which scientist and mechanic have bestowed upon every detail connected with the foot and the shoe, the practice ought now to be perfect. But in reality we for a long time progressed in a crab-like fashion. It was not flattering to the workman of that time to be told that the "children of the desert" did better things in the way of making and fixing shoes to horses' feet than were then done; but there are good reasons for the statement. The Arab shoe was light, it protected the bottom of the foot from injury, the nails had very large heads, and were so driven that only the lower part of the crust was pierced, and the heads of the nails gave a better foothold than is obtained by the modern system of shoeing.

The drawing in Fig. 10 (page 18) shows the form of the Arab shoe, copied from Dr. Fleming's work on Shoeing, and it is evident that this thin flat plate of iron can be fastened to the foot in such a way that the whole of the bottom of the organ, the crust, the sole, and the frog, shall be equally pressed. In fact, the Arab shoe is in the position of a thin sheet of iron between the bottom of the foot and the ground, causing the least interference with the natural tread.

Compare the modern shoe and present system of applying it to the foot. First, as will be seen by Fig. 11 (page 19), the shoe is a narrow rim of iron, with the nail-holes so close to the outside edge that the nails must be driven some distance up the wall of the hoof to get hold enough to keep the shoe on. Then the inside of the shoe is often beaten out (seated), so as to rest on the crust only while the sole and frog are pared away, and all the parts of the ground surface of the foot which should help to support the animal's weight are lifted off the ground. The Arab shoe allowed the whole of the base of the foot, wall, sole,

and frog, to rest on a hard surface. The modern shoe lifts the greater part of the base from the ground, and thus the whole of the horse's weight rests on the edge of the wall. The diagrams

FIG. 10.



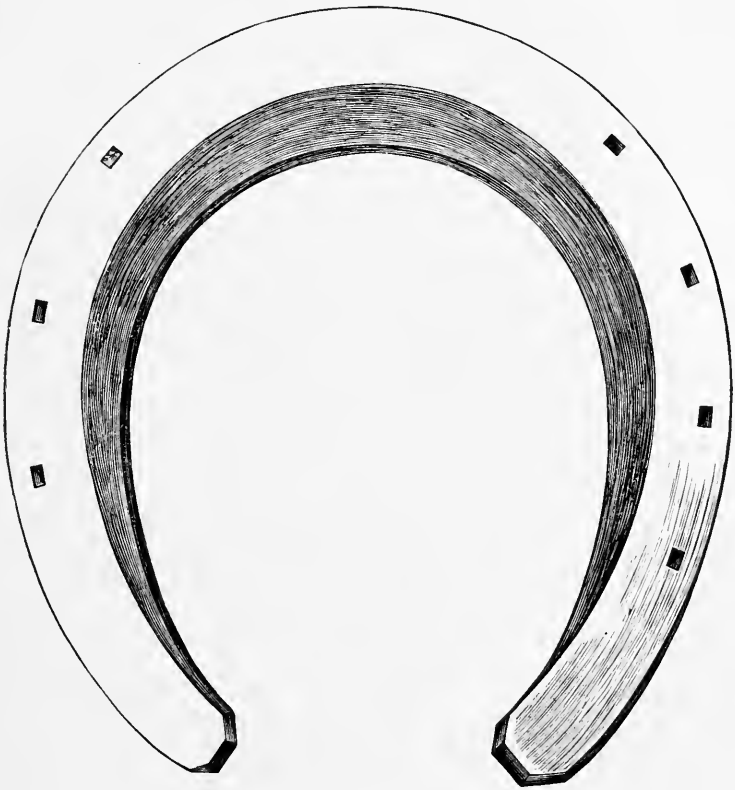
ARAB SHOE AND NAIL.

in Fig. 12 (page 20) will show the difference in the results of the ancient and the modern system.

A system of shoeing, known as the Charlier system, some years ago attracted attention and even made some progress.

Many difficulties stood in the way of its general adoption, but in its principle the plan was as near perfection as possible. The Charlier shoe is a narrow rim of iron which is let into the wall of the foot for a certain distance round the toe and quarters, leaving the whole of the bottom of the hoof to take its proper

FIG. 11.



ORDINARY FORE-SHOE (SEATED).

place on the ground. A foot thus shod is as nearly in a natural position as it can be with any form of shoe. It is even better placed than with the Arab shoe, because the bottom of the foot is in contact with the earth, instead of with an iron plate, and in either way the foot is better off than with the ordinary shoe, because with that the sole and frog are in contact with nothing at all.

It would not be fair at this beginning of another century to allow the previous strictures to pass without reference to the

FIG. 12.

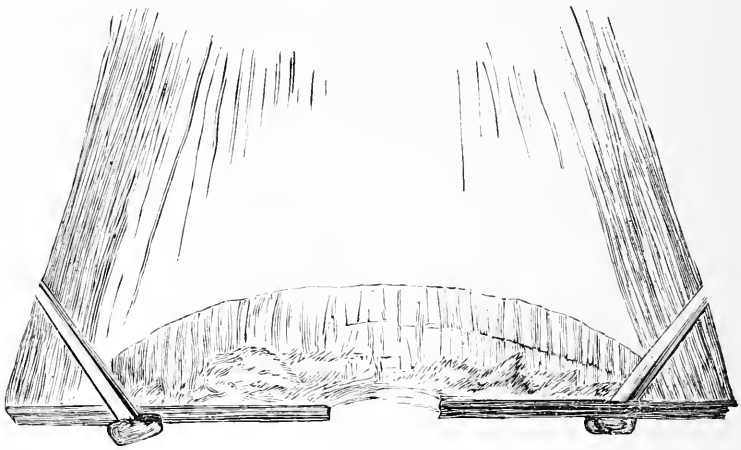


DIAGRAM OF ARAB SHOE NAILED TO FOOT.

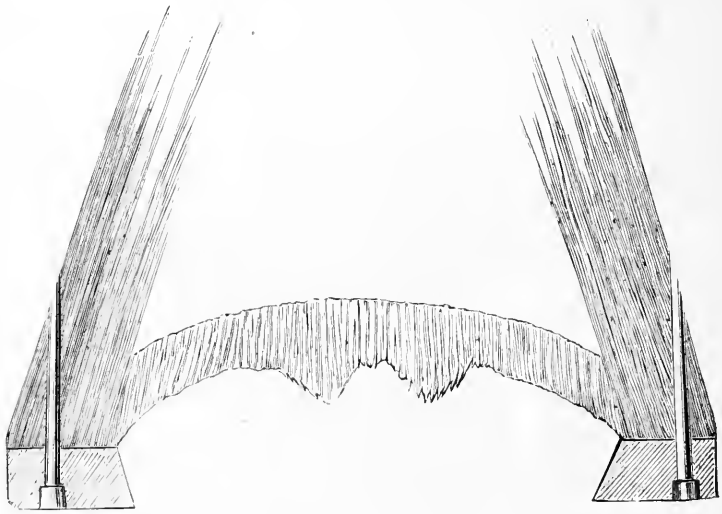


DIAGRAM OF MODERN SHOE NAILED TO FOOT.

great improvements which have taken place under the system of competitive horse-shoeing inaugurated by the Royal Agri-

cultural Society and other large agricultural societies in association with the Farriers' Company. Travelling shoeing-forges under the charge of competent instructors are also engaged in excellent work in the more remote districts, and judges of shoeing are emphatic in asserting that the advances which have been made in the last few years in the recognition of true principles and in the mechanics of the art are beyond what was even hoped for when the work began.

The workman now understands that he is not merely engaged in fixing an iron ring on the bottom of a horse's foot, but is expected to look closely to the form of the foot and position of the limb in order to decide how far he may be able, by degrees, to correct errors. The idea that such correction was possible is not new.

A former Governor of the Royal Veterinary College never missed an opportunity of informing the students that all horses were born with crooked legs, and that it was the business of the shoeing-smith, by careful adjustment of the shoes, to rectify the deformity. His remarks were received with concealed amusement, but it only remained for a later period to embody the idea in practice. As far back as 1882, Leisering and Hartmann, in their fifth edition of "Der Fuss des Pferdes," and subsequently Lungwitz, Director of the Shoeing School of the Royal Veterinary College, Dresden, in his "Text-book of Horse-shoeing," corrected what was once accepted as an eccentric notion into a guiding principle.

The Text-book by Lungwitz, eighth edition, was translated by John W. Adams, Lecturer on Shoeing at the University of Pennsylvania, in 1898. It would be impossible in the limits of this pamphlet to enter into all the details referring to malpositions which are capable of being modified by a proper preparation of the foot and adjustment of the shoe; but the writer remarks that in all the various positions of the limbs we find the feet in one of three forms, and that by a proper knowledge of these forms the workman is assisted in the preparation of the hoof for the shoe, as well as the choice of the length of the shoe.

The first form is that of the normal position, as observed when standing in front of and behind the horse; a line drawn down the centre from the knees and hock will divide the hoof into two equal portions.

The next position is the one in which the toes are too wide apart, being turned outwards, and as a consequence the base is unnaturally widened and the fetlock no longer bears its proper relation to the foot.

The third position is the exact opposite of the second. The toes are turned in, and the base is consequently narrower than the normal.

It would naturally occur to the shoeing-smith that he could assist the rectification of these incorrect positions by lowering the wall of the hoof on the outside in one case, and by lowering the inside of the crust in the other.

It is not, however, to be expected that malformed limbs are to be restored to a proper position at once by a correct method of shoeing; but it is recognised now that something in this direction may be done.

Whether the proper angle of the relation of the foot to the ground be estimated at 45, 50, or 60 degrees, about which opinions differ, the eye of a good judge will determine without diagrams or geometrical instruments when the happy mean has been reached by persevering effort.

To sum up, the principles of shoeing may be said to be comprised in the following conditions:—

Protection of the horn from undue wear.

Interference with the normal hoof only to the extent which is absolutely necessary for the proper adjustment of the shoe.

Correct fitting of the shoe to the foot by the obtainment of level bearing, which is best secured by applying the shoe sufficiently hot to turn the elevated parts and thus indicate where levelling is not complete.

The objection to what is called hot shoeing in contradistinction to cold shoeing is purely fanciful when the hot method is carefully employed, as it would naturally be by a good workman. The advantages gained by securing a perfectly level bearing for the shoe by means of the application of the heated shoe to the crust were illustrated by some practical experiments which were performed sixty years ago at the Cavalry School of Saumur. Upwards of 22,579 shoes were fitted cold, and of these 386 were lost, detached, or broken, while out of the same number of shoes fitted on hot only 123 were lost.

Proper regulation of the position of the nails, with a view to leave the heels as free and unfettered as possible, is another principle which the good workman would never forget. And, finally, there remains the regulation of the angle of the foot with the ground and the fetlock. Keeping in view the two principles of shoeing, the suggestions which are to be given on the practice of the farrier's art may be put into very few words.

To begin with, all efforts at neatness of finish by the aid of rasp and oil-brush to the wall of the hoof should be at once discouraged. The sole, bars, and frog, dirty, ragged, and scaly as

they will be when the horse comes to be shod, may often be left alone with advantage, or, at the most, only touched with the knife with caution so far as may be necessary for the proper adjustment of the shoe.

By the use of the rasp the crust may be lowered as much as in the judgment of the farrier is required, and the toe of the foot will usually have to be rasped more than the quarters or heels; but in this the skill of the smith is shown in his ability to keep a perfectly level base, so that the horse standing on the unshod foot has a natural position. No doubt can be felt as to the truth of the maxim that the shoe should fit the foot so that no after-rasping is wanted. Fitting the shoe without applying it hot to the crust is possible to a good workman, but no harm is done if the hot iron should be kept in contact with the horn for a few seconds, and the gain in secure holding of the shoe to the foot far outweighs all the objections which can be urged.

Nails should be driven so as to take a short and wide hold of the crust, and if the shoe can be secured by three nails on the outside quarter and two on the inside the work is well done; every additional nail driven into the hoof, especially of the fore-foot, demands some sort of apology, or at least explanation.

A concave ground surface for the shoe gives a far better hold than a flat one, and, if with that arrangement the frog and sole are in full contact with the ground, it will be possible to do without calkins for the hind shoes of all horses which are not required for heavy draught-work in hilly districts.

That a vast improvement has taken place in the last few years in the art of shoeing has already been affirmed, and in the future the work to be done lies in the direction of diffusion of the improvements. It is still true in some degree that the horse-owner and his servants in many cases require education before they will be disposed to accept the rules laid down in this pamphlet for the guidance of the shoeing-smith. At one time, not long ago—and it is to be feared that the observation is even now correct in some degree—it could be said that no shoeing-smith dared send home a horse shod in the way which is known to be the right one, with soles and frogs uncut, left level with the ground, and the hoof unrasped and unpolished; because if he did the master of the animal and his men would denounce the work as crude and unfinished, and solemnly promise never to choose the same workman again.

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